

ART. XIV.—*An Unusual Australite Form.*

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Among a collection of approximately 550 australites found by the author in the Sherbrook River District, east of Port Campbell, is one rare and unusual form resembling a deep elongated bowl in shape. Only one other similarly shaped specimen has come under the author's notice, and it is a rather larger example from Western Australia (probably the Kalgoorlie District) that was formerly in the collection of Mr. S. F. C. Cook of Kalgoorlie, but is now lodged in the Melbourne University collection (Register No. 3104). A somewhat comparable, but larger example, 10 mm. long and 6 mm. deep, has been described by E. J. Dunn as cup-shaped (2, plate XXIII.), who states that this is the only example approaching such a form that he has seen (2, p. 224).

The dimensions, weights, and specific gravities of the Port Campbell (I.) and of the Western Australian (II.) examples of bowl-shaped australites are shown in table 1.

TABLE 1.

	Length in mm.	Width in mm.	Depth in mm.	Thickness at Lip in mm.	Thickness at Base of Bowl in mm.	Weight in Grams.	Specific Gravity.
I. ..	7.5	5	3	0.5	0.5	0.135	2.410
II. ..	9	4	3	0.5	0.75	0.149	2.442

Both of the specimens are a brownish bottle-green in colour, the Western Australian example being slightly darker than the one from Port Campbell. Under crossed nicols of the petrological microscope, both of these examples are completely isotropic.

The Port Campbell form was discovered on a gullied portion of the old road, a mile and a half east of the track to Loch Ard Gorge (1, map). The external surface, i.e., the anterior surface, of the specimen was uppermost, this being the usual position of rest of australites on the earth's surface. Both the anterior (external) and the posterior (internal) surfaces are covered with minute bubble pits, and the position of the centrally placed "core" is marked by a small cavity (fig. 1B). No flow phenomena are visible on any portion of the specimen.

The Western Australian example has a very smooth external surface. The position of the "core" at the bottom of the bowl (on the posterior surface), is marked by an elliptical area with well defined but fine flow lines (*c*, fig. 1A), having a complex, fold-like pattern. A pronounced bubble cavity (*b*, fig. 1A), situated to one side of the "core", is seen to possess numerous minute bubble pits on the walls, when examined under high magnification. As in the Port Campbell specimen, the lip of the bowl-shaped form is smooth and rounded (*l*, fig. 1A and B).

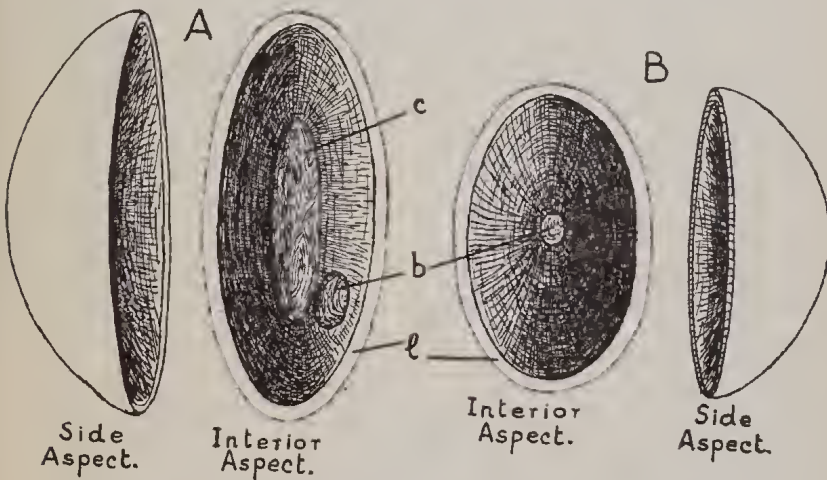


FIG. 1.—Bowl-shaped Australites, A, from Western Australia, x 5½, B, from Port Campbell, Victoria, x 5.

c. = flow-lined core.
b. = bubble cavities.
l. = rounded lip of bowl.

ORIGIN OF BOWL-SHAPED FORMS.

The original forms from which the bowl-shaped australites developed were probably flat and oval-shaped with a broad flange-like area, and a small central core, as in three or four flat examples from the Port Campbell District, which resemble the oval-shaped, flat form illustrated by Dunn (2, plate XXIII., fig. 7). During the end stages of the flight history of the flat, oval-shaped forms, while the australite glass was still in a semi-plastic condition, it is probable that the frictional resistance of the atmosphere against the anterior (forward) surface of the earthward-moving australite, was responsible for turning back the plastic portion of the broad flange to a position almost at right angles to its original position, thus producing a bowl-like form. Figures 1 and 6 on plate XXIII. of Dunn's illustrations (2), which show the flange slightly turned over towards the posterior (back) surface of the australites, may represent early stages in the above-suggested mode of development of bowl-shaped forms. It seems unlikely that the regular curving over

of the flange towards the core could have been produced by impact of the semi-plastic australite glass against the earth's surface, as suggested by Dunn (2, p. 224). Under such conditions, flattening of either one side or the other would be expected, and this is not observed (see fig. 1). Moreover, it is now generally accepted that australites have completely solidified before reaching the ground.

The formation of the flat, oval-shaped australites from which the elongate, bowl-like forms are considered to have been produced is a matter for conjecture. No satisfactory explanation has as yet been advanced to account for their development. The evidence provided by one poorly developed disc-like form, and two nondescript fragments, from the Port Campbell District is rather suggestive of the production of flat, disc-like forms from flat fragments shed from larger forms of australites during flight. These poorly developed examples are flat, somewhat irregular in outline, and show incipient stages in the development of flanges. No intermediary forms between them and the regularly shaped discs, however, have as yet been found, so that the evidence available is by no means conclusive that disc-like australites were formed from fragments shed from larger specimens during flight.

References

1. BAKER, G.—Tektites from the Sherbrook River District, East of Port Campbell. *Proc. Roy. Soc. Vic.*, xlix., (2), n.s., pp. 165-177, 1937.
2. DUNN, E. J.—Additional Notes on Australites. *Proc. Roy. Soc. Vic.*, xxviii., (2), n.s., pp. 223-226, 1916.